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World History (Honors)

*Directions: Read and annotate each paragraph (FOR REAL—ANNOTATE!)*

**Scientific Ideas *before* the Renaissance**

Throughout human history, people have strived to understand the world of nature: how does the world “work”? Is there a universe beyond us, and what place does the earth have in that universe? Etc, etc.

Thinkers during the Middle Ages and Renaissance were no different! They sought to make sense of nature. Although we are now learning about the ideas that came from the Renaissance, it is helpful to understand the ideas that dominated thinking *before,* during the Middle Ages. So, let’s now do that, and read on!

From the tenth to the fourteenth centuries scholars from both the Islamic and European worlds had different banks of knowledge and different mindsets. However, these scholars also shared the bases for their knowledge of the universe: reliance on their religions’ revealed truths, and on the works of Greek, Indian, Persian, and other thinkers most of whom lived before both the Prophet Muhammad and Jesus Christ. Dealing with the resulting contradictions between religious and classical authorities on the one hand, and truths based on revelation and reason on the other, created ongoing problems for Muslim and Christian scholars alike.

The following beliefs about the structure and behavior of the universe drawn from Greek and Arabic sources were shared in their broad outlines throughout Europe and the Muslim world. What neither shared was a clear differentiation of “science” from philosophy, religious ideas, logic, and common sense.

* A motionless earth was the center of the universe. It was surrounded by water, beyond which was an envelope of air, in turn ringed by fire. This realm was imperfect and changeable. In it, the four elements of earth, water, air, and fire existed everywhere as varied mixtures, with heavy earth and water constantly striving downwards and light air and fire striving to rise. The whole was enclosed, and air as well as fire stopped from escaping upwards, by a set of nested, concentric, transparent heavenly spheres of crystal, the edge of each touching the edge of the next. (Imagine thick and regularly spherical skins a bit like those of an onion, but more transparent, around a central core.) The spheres moved around the earth, sliding against each other in a regular circular motion carrying with them the heavenly bodies, each embedded in one of them: the moon, five planets, the sun (between Mars and Venus), and the fixed stars. Beyond these was the habitation of God and of saved souls.
* All the heavenly region was perfect, unchanging, and utterly different from the terrestrial region below the moon, where any movement was in a straight line, unlike the circular heavenly movements. But everywhere in the universe, in heaven as well as on earth, rest was characteristic of all bodies and objects. Unless moved by something, and unless the mover was in constant contact with the thing moved, no movement was possible.
* The explanation for movement of the spheres carrying heavenly bodies usually involved spiritual beings (“intelligences” or angels, the two words being used interchangeably) constantly turning each sphere. A ninth outer sphere, the Unmoved or Prime Mover, related to the other heavenly spheres the way the soul relates to the body: it provided the motive power transmitted to the rest of the spheres. On earth, the movement of falling bodies, for instance, was accounted for by the element of earth, which sought its natural home downwards, because of its heaviness. Flames, on the other hand, were light and rose upwards.
* The physical universe was hierarchical, as was the human. Lowest on the scale was the element earth. In ascending order, with less of earth and more of the lighter elements in their make-up, were beings with vegetative, animal, and rational (human) souls. From the moon’s sphere upward, a hierarchy of angels, with spiritual souls, moved the heavenly spheres, with God above all. Each sphere was ruled the ones below it.
* Humans mirrored the physical universe, which deeply affected human affairs. Movements of heavenly bodies influenced what humans did and what happened to them. Parts of the body were “ruled” by planets and signs of the zodiac. Astrology, barely if at all distinguished from astronomy, was therefore enormously important in decision-making by rulers and commoners alike.